



OLR RESEARCH REPORT

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FINAL DEEP RENEWABLE PORTFOLIO STANDARD REPORT

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You asked that we update OLR report [2013-R-0205](#) to describe changes from the Department of Energy and Environmental Protection's (DEEP) draft report on the renewable portfolio standard (RPS) to the final report.

SUMMARY

The findings of the final report are substantially the same as the draft. In both, DEEP finds that, among other things:

1. the annual ratepayer cost of the RPS could double to more than \$280 million by 2022, as the proportion of power electric companies and competitive suppliers they need to procure from renewable sources increases;
2. currently only 11% of the Class I requirements (which are met by resources such windpower and certain biomass plants) are met by using Connecticut facilities; and
3. conversely, there is a glut of supply of Class III resources, such as electricity from combined heat and power facilities and savings from efficiency program.

The final report, like the draft, recommends:

1. expanding the definition of hydropower facilities eligible for Class I designation from 5 megawatts (MW) to 30 MW of generating capacity,
2. allowing all electricity produced biologically derived methane to count as Class I,
3. authorizing DEEP to participate in regional procurement for Class I resources and large-scale hydropower resources (greater than 30 MW) under long-term contracts, and
4. discontinuing Class III incentives for ratepayer funded efficiency programs.

In response to comments received on the draft report, DEEP further analyzed certain issues. In the draft report, DEEP recommended establishing a RPS tier for large scale hydropower and assumed that such power could be procured at no premium over the wholesale cost of power. Several commentators argued that this assumption was implausible. DEEP accordingly analyzed the impact of a 1¢ per kilowatt-hour (kWh) premium for such power. DEEP also:

1. modeled the impact of efficiency programs on electric demand and thus the cost of complying with the RPS,
2. explored the potential impact on projected compliance costs of procuring Class I renewables through long-term power purchase agreements, and
3. estimated the cost of expanding Class I RPS requirements from 20% in 2020 to 25% in 2025 without establishing a separate tier for large-scale hydropower.

Based on the comments received, and the additional analyses, DEEP modified several recommendations in the draft report. It removed a recommendation that a separate contract tier, in which large hydropower would qualify, be established. Instead, it recommended an approach in which large-scale hydropower would only be used to meet part of the Class I RPS requirements if there is a shortage of the renewable energy credits (RECs) used to comply with the RPS that is likely to continue in the future.

DEEP also modified its recommendation regarding biomass and landfill methane gas. The report recommends that the phase down of biomass Class I eligibility be established in a separate proceeding.

Finally, DEEP does not recommend any changes to the Class I RPS requirements after 2020 at this time. In the draft report, DEEP recommended extending the requirements from 20% in 2020 to 25% in 2025.

BACKGROUND

The RPS requires electric companies and competitive suppliers to procure part of their power from renewable resources. The law defines three classes of resources: I, II, and III ([CGS § 16-1](#)). Class I resources include solar and wind power and certain biomass and hydropower resources. Power from biomass resources counts as Class I if the facility uses sustainably-produced biomass and meets other requirements. Power from other types of biomass facilities, as well as from trash-to-energy facilities, counts as Class II resources. Power from small hydropower facilities is Class I or II, depending on when the facility went into service. Class III resources are the power produced from certain cogeneration and waste heat recovery systems and the energy saved from certain conservation programs.

The requirement for Class I resources increases over time, rising to 20% of power sold in 2020. The companies and suppliers must obtain an additional 3% of their power from either Class I or II resources and must meet 4% of their need with Class III resources. The latter two requirements do not change over time.

The companies and suppliers can meet the RPS by buying RECs on the regional wholesale market. A company or supplier that does not meet the RPS must make a 5.5 cents/kWh alternative compliance payment (ACP) for the shortfall. PURA must transfer the payments to the state's Clean Energy Fund to develop Class I resources.

PA 11-80 required DEEP to analyze (1) options for minimizing the cost to ratepayers of procuring renewable resources under the RPS and (2) the feasibility of increasing the RPS. The analysis must consider the benefits, costs, and impacts of expanding the definition of a Class I renewable energy source to include hydropower and other technologies.

RPS REPORT

Findings

The findings in the final report are substantially the same as in the draft, described in greater detail in OLR report [2013-R-0205](#).

Class I. DEEP estimates that Connecticut ratepayers paid approximately \$168.1 million in 2012 to support RPS generation sources, of which 90% was used for Class I resources. It estimates that the annual cost of Class I compliance under the current rules could increase to \$340 to \$380 million in 2022 as a result of higher RPS requirements and higher REC prices, among other things. The final report notes that the annual cost of compliance would decrease by about \$20 million if efficiency reduces the growth in demand, as envisioned in the comprehensive energy strategy and integrated resources plan.

Currently, only 11% of the RECs used to meet Connecticut's Class I standard comes from in-state projects. In contrast, most of the ratepayer funding for Class I has gone to out-of-state biomass plants. These plants are among the least clean Class I resources and many were already operating when the RPS requirement was established.

Classes II and III. According to the report, through 2012, there was a surplus of Class II and Class III renewable resources. Since the Class II and Class III targets do not increase, the report anticipates that the surplus will continue to keep Class II and III REC prices low and costs relatively constant through 2020.

The report argues that the oversupply of Class II and Class III resources has resulted in limited incentives to support new or existing investments in these resources. The oversupply problem is compounded by the fact that the Class III RPS currently provides incentives for efficiency investments made through the state's conservation programs, which are already supported by ratepayer funds.

RECOMMENDATIONS

Class I

In the draft report, DEEP examined two policy options to reduce the cost of complying with the current RPS while advancing the goal of reducing the negative impacts of traditional generation. One option

would expand the eligibility of Class I resources to include resources that count as Class I resources in other New England states. DEEP also evaluated more substantial changes that would allow a portion of Class I to be met by large hydroelectric power.

As part of the first option, DEEP recommends that:

1. the electricity produced by geothermal steam generation qualify as a Class I resource,
2. anaerobic digesters be specifically qualified as a Class I resource, and
3. post-2003 hydro projects up to 30 MW that meet the Low Impact Hydro Institute's certification standards count as Class I resources.

The final report includes very similar recommendations.

In its second option, the draft report recommended allowing large-scale hydropower to meet a portion (contracted tier) of Class I requirements. The report posited that it may be possible to contract for Canadian hydropower delivered into New England at approximately the projected market price of non-renewable power while paying little or no renewable premium. According to the draft report, allowing the importation of 100 MW of large hydropower would decrease electric rates, because it is the lowest cost renewable option. Assuming the power could be bought for no premium over the cost of non-renewable power, the draft report estimates the cost of large hydropower to be \$48.2 million less in 2025 than the estimated cost of out-of-state wind, the next least costly option. Using a scenario in which the total Class I requirement was increased to 25% in 2025, the draft report estimates that Connecticut ratepayers could save from \$564-\$830 million in nominal dollars or \$355-\$542 million on a present value basis over the 10-year period from 2013 to 2022.

The draft report recommends that renewable power bought under long-term contracts be allowed to fill part of the Class I requirement starting in 2014, with the proportion increasing to 4.5% in 2020. The contracted tier could be filled with either large-scale hydro with no premium, or other low-cost Class I resources. DEEP further recommended that the Class I requirement be increased to 25% in 2025, and that the contracted tier be increased to 7.5% in 2025.

The final report takes a different approach in response to extensive comments filed on the draft report. Rather than modifying the Class I RPS requirements through the use of a contracted tier as described above, it argues that Connecticut may be better served by maintaining a degree of flexibility to adjust the RPS compliance targets if existing Class I renewable supply proves to be inadequate.

The final report recommends adopting a conditional mechanism to allow part of Class I RPS growth to be filled with large scale hydropower, but only if a significant amount of Class I RPS requirements are being met with ACP payments. DEEP would conduct a procurement open to both Class I resources and large-scale hydropower with the goal of entering into a long term contracts. If successful in the bidding process, large scale hydropower resources would be procured as a hedge against increased REC prices and insufficient renewable supply. However, large hydropower would not be used to fill Class I RPS requirements unless a REC shortage develops. If this occurs, DEEP would verify if a shortage has developed and is likely to continue. If it concludes that a shortage is likely to continue, it could allow large hydropower to fill part of the Class I requirements. These requirements could then be reduced for all suppliers by a corresponding amount. The capacity and energy would be sold back into the markets, and large hydropower would not be eligible for RECs.

DEEP envisions conducting a transparent and competitive process to select the projects. The electric companies would sign the contracts and administer them. All of the products (e.g., energy, generating capacity, and RECs) would be used to benefit all electric ratepayers of the companies. The cost of the contracts could be passed on to these electric ratepayers through a charge that would apply to customers, whether they bought power from the company or a competitive supplier.

The final report also discusses options for expanding the Class I targets. DEEP estimates that increasing the Class I RPS requirements from 20% in 2020 to 25% in 2025 could increase compliance costs by \$82 to \$95 million by 2025. Increasing the targets for Class I resources, combined with modifications that would allow large hydropower to fill a portion of the Class I RPS requirements, could reduce compliance costs below relative to making no changes. Since DEEP does not recommend that part of Class I be filled with large hydropower, recommends that no action on expanding Class I be taken at this time.

As noted above, Connecticut allows older, less-clean biomass and landfill gas facilities to qualify under Class I. The draft report recommends the gradual introduction of more stringent emission controls, which will either encourage these facilities to deliver cleaner energy or promote the development of new, cleaner resources. The draft cautions that this transition should be carefully timed so as not to become effective until other Class I resources can be developed or large-scale hydro can be used to meet the region's needs.

The final report takes a different approach. It recommends a gradual phase-down of the share of Connecticut's RPS that is met by biomass and landfill gas facilities. By gradually reducing the value of RECS awarded to those sources, the state can replace many of these resources with new, cleaner resources such as wind, solar, or other zero-emissions renewables. The report also recommends that the state be authorized to enter into power purchase agreements with some of these facilities if it determines that retaining them provides economic benefits to the state, is in the interest of ratepayers, and furthers the goals of the comprehensive energy strategy.

Class III

The draft report notes that the current supply of Class III resources is significantly greater than the existing requirements. Oversupply in the Class III markets has resulted largely from continued growth in utility energy efficiency programs, which account for approximately two-thirds of the RECs.

DEEP believes that the best way to improve the Class III market would be to discontinue eligibility for efficiency programs administered by the utility companies. If RECs from these programs were removed from the market, the oversupply would reverse and there would be an under-supply of Class III RECs. This would drive the price to the current cap of 3.1 cents per kWh. The higher REC prices would increase revenues for existing combined heat and power projects and provide a greater incentive for new projects and third party conservation development.

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